

HIGH TEMPERATURE CALCINATION OF SELECTIVATED
MOLECULAR SIEVE CATALYSTS FOR ACTIVITY AND
DIFFUSIONAL MODIFICATION

ABSTRACT

A method is disclosed for modifying a catalytic molecular sieve for shape-selective hydrocarbon conversions comprises:

a) selectivating said catalytic molecular sieve by contacting with a silicon-containing selectivating agent; and

b) calcining the selectivated catalytic molecular sieve at high temperature calcination conditions comprising temperatures greater than 700°C, which conditions are sufficient to reduce acid activity as measured by alpha value and increase diffusion barrier of said catalytic molecular sieve as measured by the rate of 2,3-dimethylbutane uptake, as compared to the selectivated catalyst. Catalytic molecular sieves thus prepared, such as silica-bound ZSM-5, and their use in hydrocarbon conversion processes such as aromatics isomerization, e.g., xylene isomerization, ethylbenzene conversion and aromatics disproportionation, e.g., toluene disproportionation are also disclosed.